FOLDING EXERCISE TREADMILL WITH FRONT INCLINATION

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an exercise treadmill and more particularly, to an exercise treadmill having a fold-up capability and a front that is adjustable in the vertical direction.

2. Description of the Related Art

A conventional exercise treadmill essentially includes a base frame and a treadmill frame. The base frame is placed on the floor, having an upright upwardly extended from the front side for holding by the user walking on the treadmill belt of the treadmill frame. In order to simulate walking on a slope, the treadmill frame is provided with a locating hole on the front side for connection to one of a vertical row of locating holes at the front side of the base frame selectively by a lock pin. After use, the user can lift the rear side of the treadmill frame and receive the treadmill frame to the upright of the base frame to reduce space occupation.

This manual design is suitable for a small scale exercise treadmill, not practical for use in a big scale exercise treadmill. When received in the non-operative position, an additional lock device is necessary to lock the treadmill frame in the received position. A mistake during operation may cause the treadmill frame to fall, resulting in an accident.

SUMMARY OF THE INVENTION

It is the primary objective of the present invention to provide an exercise treadmill, which enables the treadmill frame to be received in the non-operative position or adjusted to the desired angle of inclination by means of an electric control.

It is another objective of the present invention to provide an exercise treadmill, which provides a self-locking function during turning of the treadmill frame, ensuring a safety use.

To achieve these objectives of the present invention, the exercise treadmill comprises a base frame, a treadmill frame having a front side detachably connected with the base frame, a locking mechanism provided at a front side of the base frame for locking the front side of the treadmill frame to the base frame, at least one crank arm pivoted to the treadmill frame and having a sliding member for supporting on the floor, and a lifting mechanism mounted in the treadmill frame. The lifting mechanism includes a motor, and a transmission unit coupled between the motor and the crank arm for moving the sliding member of the crank arm on the floor upon operation of the motor so as to either force the front side of the treadmill frame to move vertically relative to the base frame while the front side of the treadmill is detached from the base frame or force a rear side of the treadmill frame to move vertically relative to the base frame while the front side of the treadmill is locked to the base frame by the locking mechanism.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top view of an exercise treadmill according to the present invention, wherein an upright of the base frame is not shown.

FIG. 2 is a left side view of the present invention showing the treadmill frame set in horizontal.

FIG. 3 is similar to FIG. 2 but showing the front of the treadmill frame lifted.

FIG. 4 is a left side view of the present invention showing the received status of the exercise treadmill.

FIG. 5 is a sectional view taken along line 5-5 of FIG. 1, showing the stop

flange of the lock pin inserted through the locating plate; and

FIG. 6 is similar to FIG. 5 but showing the stop flange of the lock pin stopped against the stop rods of the locating plate.

DETAILED DESCRIPTION OF THE INVENTION

As shown in FIGS. 1 and 2, an exercise treadmill provided by a preferred embodiment of the present invention is shown comprised of a base frame **10**, a treadmill frame **20**, a locking mechanism **30**, two crank arms **40**, and a lifting mechanism **50**.

The base frame **10** is a rectangular open frame formed of metal rod members by welding for placing on the floor. The base frame **10** comprises an upright **12** upwardly extended from the top near the front side for holding by the user using the exercise treadmill, a control panel **13** mounted on the upright **12**, a retaining member, namely a lug **14**, at the front side of the upright **12**, and two upright sidewalls **15** bilaterally longitudinally disposed at the front left and right sides. The sidewalls **15** each have a vertically extended guiding slot **16** and a sliding slot **17** horizontally forwardly extended from the bottom end of the guiding slot **16** to the periphery of the sidewall.

The treadmill frame **20** is mounted on the base frame **10**, having a front side **21**, a rear side **22**, a left side **23**, a right side **24**, a walking belt **25** provided between the left side **23** and the right side **24** for walking by the user using the exercise treadmill, a foot member **26** at the bottom of the rear side **22** for supporting the rear side of the treadmill frame **20** on the floor, a first retaining member, namely a first lug **27** having a through hole, at the bottom of the front side **21**, two second retaining members, namely two second lugs **28**, symmetrically disposed at the left side **23** and the right side **24** and connected with each other by a rod **28a**, two locating rods **29** respectively outwardly

protruded from the left side **23** and the right side **24** between the first lug **27** and the second lugs **28** and respectively coupled to the guiding slots **16** of the base frame **10**.

Referring to FIGS. 5 and 6 and FIGS. 1 and 2 again, the locking mechanism **30** comprises a lock pin **32**, a locating plate **33**, and a compression spring **34**. The lock pin **32** has a stop flange **35** protruded from the periphery of the middle part. The locating plate **33** has a center insertion hole **36**, and two stop rods **37** perpendicularly symmetrically extended from one side. The lock pin **32** is transversely provided at the front side of the base frame **10** and inserted through the center insertion hole **36** of the locating plate **13**, having one end extended out of the base frame **10** and provided with a handle **31**, and the other end inserted into the trough hole of the first lug **27** of the treadmill frame. When pushing the lock pin **32** toward the inside of the base frame **10** to force the stop flange **35** through the center insertion hole **36** of the locating plate **13**, the lock pin **32** is engaged into the lug **14** of the base frame **10** and the through hole of the first lug **27** of the treadmill frame **20** to lock the front side of the treadmill frame **20** to the base frame **10**. On the contrary, when pulled the lock pin **32** outwards and then rotated the lock pin **32** through an angle to disengage the lock pin **32** from the lug **14** of the base frame **10** and the first lug **27** of the treadmill frame **20** and to stop the stop flange **35** of the lock pin **32** against the stop rods **37** of the locating plate **33**, the treadmill frame **20** is unlocked from the base frame **10**. Further, the spring member **34** is sleeved onto the lock pin **32** to push the lock pin **32** inwards from the unlocking position toward the locking position.

The two crank arms **40** are respectively pivoted to the rod **28a** that is connected to the second lugs **28** of the treadmill frame **20**, each having a first segment **41** and a second segment **42** integrally extended from an end of the first segment **41** at an angle at an angle. The first segment **41** has the distal end mounted with a sliding

member, namely a roller 43, which is supported on the floor. Torsional springs 44 are respectively sleeved onto the rod 28a. The torsional spring 44 has a distal end fastened to the treadmill frame and the other distal end pressed on the first segment 41 of the crank arm 40 for imparting a downward force to the first segment 41 of each crank arm 40 and an upward force to the treadmill frame 20.

The lifting mechanism 50 is mounted in the treadmill frame 20, comprising a motor 51 and a transmission unit 52 driven by the motor 51. The output shaft 53 of the motor 51 is a screw rod extended in parallel to the length of the treadmill frame 20. The transmission unit 52 is comprised of a sliding block 54 threaded onto the output shaft 53 of the motor 51, and two parallel links 55 pivotally connected to two lateral sides of the sliding block 54. The links 55 each have one end respectively pivoted to the sliding block 54 and the other end respectively pivoted to the distal ends of the second segments 42 of the crank arms 40. During rotary motion of the output shaft 53 of the motor 51, the sliding block 54 is forced to move along the output shaft 53, thereby causing the links 55 to move the crank arms 40, and therefore the rollers 43 are moved forwards or backwards on the floor.

Referring to FIGS. 3 and 4, when wishing to increase the angle of inclination of the treadmill frame 20, hold the handle 31 of the lock pin 32 with the hand and then pull the lock pin 32 outwards to unlock the front side of the treadmill frame 20 from the base frame 10, and then operate the control panel 13 to rotate the output shaft 53 of the motor 11 of the lifting mechanism 50 clockwise (viewed from the front side of the treadmill frame 20), causing the slide54 to move along the output shaft 53 toward the rear side 22 of the treadmill frame 20 . At this time, the links 55 are forced to turn the crank arms 40 and to move the rollers 43 on the floor toward the front side, and therefore the treadmill frame 20 is turned about an axis passing through the foot

member **26** to lift the front side **21** of the treadmill frame **20** from the base frame **10** and the locating rods **29** are moved upwards along the respective guiding slots **16**. When wishing to reduce the angle of inclination of the treadmill frame **20**, operate the control panel **138** to rotate the output shaft **53** of the motor **51** of the lifting mechanism **50** in counter-clockwise direction, thereby causing the sliding block **54** to move along the output shaft **53** toward the front side **21** of the treadmill frame **20**. At this time, the links **55** are forced to turn the crank arms **40** and to move the rollers **43** on the floor toward the rear side, and therefore the treadmill frame **20** is turned about an axis passing through the foot member **26** to lower the front side **21** of the treadmill frame **20** to the base frame **10** and the locating rods **29** are moved downwards along the respective guiding slots **16**.

When wishing to receive the treadmill frame **20**, move the treadmill frame **20** to horizontal according to the aforesaid angle of inclination adjustment procedure, and then push the lock pin **32** toward the inside of the base frame **10** to lock the front side **21** of the treadmill frame **20** to the base frame **10**, and then operate the control panel **13** to rotate the output shaft **53** of the motor **51** of the lifting mechanism **50** in clockwise direction and to further move the sliding block **54** along the output shaft **53** toward the rear side **22** of the treadmill frame **20**, thereby causing the links **55** to pull the second segments **42** of the crank arms **40**. At this time, the rollers **43** are moved on the floor toward the front side, thereby causing the treadmill frame **20** to be turned about the lock pin **32** and to lift the rear side **22** of the treadmill frame **20** from the floor, and therefore the treadmill frame **20** is received to the upright **12** and held in the non-operative position. Because the sliding block **54** is coupled to the output shaft **53** through screw joint, the output shaft **53** can drive the sliding block **54** to move; however the sliding block **54** cannot drive the output shaft **53** to rotate. This one-way

self-locking function prevents falling of the treadmill frame **20** accidentally during lifting or receiving operation.

By means of the aforesaid design, the exercise treadmill can be electrically controlled to adjust the angle of inclination and automatically received in the non-operative position.

Although a particular embodiment of the invention has been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the invention. Accordingly, the invention is not to be limited except as by the appended claims.